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### Part II.—NATURAL SCIENCE.

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I.—On *ERITES*, an oriental genus of satyrid butterflies :—By  
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[Received 16th February ;—Read 1st March, 1893.]

The genus *Erites* at the present date contains five species only, (six if *E. ochreana* is held to be a distinct species, I have not seen it), found in Assam, Burma, the Malay Peninsula, Sumatra, Java, Labuan, Borneo, and the Philippines. To these I now propose to add a sixth. All are closely allied, and very similar in general aspect. They are extremely delicate butterflies, semi-transparent, of a brownish-ochreous shade, sometimes just tinted with violaceous on the upperside. All possess a submarginal series of ocelli to both wings, more or less visible on the upperside. These ocelli vary greatly in size, in some species they are large and prominent, in others quite small and inconspicuous. On the underside there are usually two discal bands, often more or less angled. These butterflies are found only in virgin forests as far as I am aware, and fly weakly close to the ground amongst the brushwood under the great trees and in open paths through the forests. Their transformations are unknown. The males have no secondary sexual characters. The females differ only from the males in the wings being somewhat broader, and in having the apex of the forewing more rounded.

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I give below a key by which the several species may be distinguished:—

Key to the species of *Erites*.

- A. Forewing with five equal-sized ocelli.
  - 1. *E. elegans*, Borneo.
- B. Forewing with the posterior ocellus very much larger than the others.
  - a. Forewing with the large ocellus on the upperside prominently pupilled with white. The apex of the wing falcate.
    - 2. *E. falcipennis*, Assam; Burma.
  - b. Forewing with the large ocellus on the upperside blind or nearly so. The apex of the wing rounded.
    - 1. Both wings with all the ocelli prominent and well-formed on the underside.
      - a<sup>2</sup>. Forewing with three small apical ocelli only in addition to the large anal one.
    - 3. *E. medura*, Java; Philippines.
      - b<sup>2</sup>. Forewing with four apical ocelli in addition to the large anal one.
        - a<sup>3</sup>. The inner discal band on the hindwing straight.
      - 4. *E. argentina*, Labuan; Borneo; Malacca.
        - b<sup>3</sup>. The inner discal band on the hindwing highly angled outwards in the middle.
    - 5. *E. angularis*, Burma; Malay Peninsula; Sumatra.
      - b<sup>1</sup>. Both wings with all the ocelli inconspicuous except the anal one in the forewing, reduced to black dots only.
  - 6. *E. rotundata*, Burma.

1. ERITES ELEGANS, Butler.

*E. elegans*, Butler, Cat. Diurn. Lep. B. M., *Satyridæ*, p. 147, n. 2, pl. ii, fig. 4, female (1868); id., Druce, Proc. Zool. Soc. Lond., 1873, p. 340, n. 2; id., Staudinger, Ex. Schmiett., p. 230, pl. lxxxii, male (1887).

HABITAT: Borneo (*Butler, British Museum; Druce; Staudinger*); three males Borneo, one female Padas River, North Borneo (*collection de Nicéville*).

2. ERITES FALCIPENNIS, W.-M. and de N.

*E. falcipennis*, Wood-Mason and de Nicéville, Butt. of India, vol. i, p. 237, n. 230 (1883); idem, id., Journ. A. S. B., vol. lv, pt. 2, p. 351, n. 30, pl. xvi, fig. 2, male (1887).

HABITAT: One male Silcui, August; one male, Nemotha, September—both in Cachar, Assam (*Wood-Mason, collection Indian Museum*); one male, Fort Lungleh, Lushai Hills, October, 1890 (*R. Pughe, collection de Nicéville*); one female, Karen Hills, Burma, April (*collection Phayre Museum, Rangoon*).

3. *ERITES MEDURA*, Horsfield.

*Hipparchia medura*, Horsfield, Cat. Lep. Mus. E. I. C., pl. v, figs. 8, 8a, female (1829); *Erites medura*, Marshall and de Nicéville, Butt. of India, vol. i, p. 236 (1883); id., Pagenstecher, Jahr. des Nass. Vereins für Natur., vol. xliii, p. 96, n. 15 (1890); *E. medura*, var. *ochreana*, Staudinger, Iris, vol. ii, p. 38 (1889); *E. ochreana*, Semper, Schmett. Philipp. Inseln, p. 326, n. 497 (1892); *Satyrus (Erites) madura (sic)*, Westwood, Gen. Diurn. Lep., vol. ii, p. 392, n. 47 (1851); *Erites madura*, Horsfield and Moore, Cat. Lep. Mus. E. I. C., vol. i, p. 229, n. 484 (1857); id., Hewitson, Journ. Linn. Soc. Lond., Zoology, vol. viii, p. 145 (1865); id., Butler, Cat. Diurn. Lep. B. M., *Satyridæ*, p. 146, n. 1 (1868).

HABITAT: JAVA (one female, *Horsfield collection in the British Museum*); East Java (*Pagenstecher*); Palawan, Philippines (*Staudinger*).

Mr. Hewitson (l. c.) describes a variety of this species as follows:—"Male and female. With five ocelli on the anterior wing, one large and four small. Sumatra; Singapore." This almost certainly equals *E. angularis*, Moore, which undoubtedly occurs in the Malay Peninsula, and also in Sumatra, as Dr. L. Martin, of Deli, Sumatra, informs me.

Mr. Hewitson also describes another variety thus:—"Male and female. With the five ocelli of the anterior wing small and of equal size, Singapore; Sarawak." This can only refer to *E. elegans*, which certainly occurs in Borneo, but very doubtfully in Singapore, at any rate it is not recorded from thence by Mr. Distant in "*Rhopalocera Malayana*," nor have I seen a specimen from any part of the Malay Peninsula.

4. *ERITES ARGENTINA*, Butler.

*E. argentina*, Butler, Cat. Diurn. Lep. B. M., *Satyridæ*, p. 188, n. 5, pl. v, fig. 8, female (1868); id., Druce, Proc. Zool. Soc. Lond., 1873, p. 340, n. 1; id., Distant, Ann. and Mag. of Nat. Hist., fifth series, vol. xix, p. 48, n. 21 (1887).

HABITAT: Labuan, an island off the N.-W. coast of Borneo (*Butler, in coll. British Museum*); Borneo (*Druce and Distant*); Borneo; Malacca (*Staudinger*); S.-E. Borneo (*collection de Nicéville*).

Unfortunately I possess no specimen of *E. medura*; but comparing the figures of *E. medura* and *E. argentina*, both taken from female specimens, and a single male of the latter in my collection, the only point of difference I can discover between them is that *E. medura* lacks a small ocellus in the second median interspace of the forewing which is present in *E. argentina*.

5. *ERITES ANGULARIS*, Moore.

*E. angularis*, Moore, Proc. Zool. Soc. Lond., 1878, p. 825; id., Distant, Rhop. Malay., p. 46, n. 1, pl. v, fig. 3, male (1882); id., Marshall and de Nicéville, Butt. of India, vol. i, p. 236, n. 229, pl. xvi, fig. 50, female (1883).

HABITAT: Taoo plateau, 3,000—5,000 feet, Upper Tenasserim

(Moore); Perak (*Distant*); Meplay Valley, January; Thoungyeen forests, March; near Moulmein, October (*Marshall* and *de Nicéville*); Yoonzaleen Valley, November; Myitta, January, both in Burma; Rawan, Selangor, Malay Peninsula, December (*collection de Nicéville*).

In this species there are four small equal-sized ocelli and one large ocellus to the forewing, the ocelli of the hindwing prominent; the inner band of the hindwing strongly outwardly angled in the middle; the outer band is twice outwardly angled, once in the middle, and once where it is crossed by the second subcostal nervule, this feature being only found in the otherwise quite distinct species, *E. elegans*.

#### 6. ERITES ROTUNDATA, n. sp.

*E. angularis*, Watson (*nec* Moore), Journ. Bomb. Nat. Hist. Soc., vol. iii, p. 19, n. 38 (1888).

HABITAT: Burma.

EXPANSE: ♂, 2·0 to 2·1; ♀, 2·2 to 2·4 inches.

DESCRIPTION: MALE. UPSIDE, both wings semi-transparent, brownish-ochreous. Forewing with the two discal bands of the underside showing through by transparency; a large, almost round (slightly oval) black ocellus in the first median interspace and extending slightly into the two interspaces beyond, obscurely pupilled with plumbeous, and surrounded with an ochreous ring. Hindwing with a prominent discal ochreous band, outwardly angled in the middle; four large round blind black ocelli, surrounded each by a very wide ochreous ring, the rings touching, thus forming a continuous band, one ocellus in each interspace from the first median to the second subcostal nervule; two fine ochreous and two fine fuscous marginal lines. UNDERSIDE, both wings finely striated with purplish-fuscous; the four apical ocelli present in the forewing of *E. angularis*, Moore and the five of the hindwing reduced to minute black dots in this species. Forewing with the fifth large ocellus much as above, but the black portion is smaller, the ochreous ring wider, and the pupil prominent and silvery; two prominent discal deep ochreous bands outwardly sharply defined by a black thread commencing close to the submedian nervule, the inner band straight, crossing the discoidal cell obliquely about its middle, and becoming lost before reaching the subcostal nervule; the outer band curved and bounding the wide ochreous outer ring of the large ocellus in the first median interspace, the band ending on the third median nervule. Hindwing with faint traces of two discal bands, the inner one straight, the outer one angled outwardly once only, as in all the species of the genus except *E. angularis*; the marginal lines as on the upperside. FEMALE hardly differs from the male, except that the wings are broader,



the apex of the forewing is more rounded, and the forewing has similar fine marginal lines as are found in the hindwing of the male. This species differs structurally from *E. angularis* in that the tooth or angulation at the termination of the second median nervule of the hindwing is as great or greater than that at the third; in *E. angularis* this tooth is quite small.

In one specimen in my collection from the Pegu Yoma, taken in December, the markings are almost as prominent on the underside as in *E. angularis*, there are two apical well-formed ocelli to the forewing, and five ocelli to the hindwing, the discal bands well-marked, but as the inner band of the hindwing is straight (not outwardly strongly angled in the middle), and the outer band is once outwardly angled only (instead of twice), I have no hesitation in placing this specimen under *E. rotundata* rather than under *E. angularis*. Another specimen in my collection taken at the same place and time is quite typical *E. rotundata*.

In the Proceedings of the Zoological Society of London for 1891, page 268, Mr. H. J. Elwes records *E. medura*, Horsfield, from East Pegu, Upper Burma, and places *E. angularis*, Moore, with a query as a synonym of that species, and makes the following remarks:—

“Numerous specimens were sent by Doherty from East Pegu, taken at about 1,500 feet [during March and April], of which several females and one male were by him supposed to be, and marked as, a distinct species. These correspond to the female taken in the Thoungyeen forests by Major Bingham, and described by Marshall and de Nicéville, ‘Butt. of India,’ vol. i, p. 237,\* as nearer to *E. medura* of Java than to *E. angularis*.”

“After examining the series closely and comparing them with one Javan specimen, I do not see how to separate the two species [*E. medura*, Horsfield, and *E. angularis*, Moore], for, though in the supposed new

\* “A female taken in the Thoungyeen forests in March differs from our other female specimens in the ocellus on the upperside of the forewing being very nearly round, not oval, with a distinct yellow iris of equal width throughout; the outer fascia of the hindwing much broader and very distinct; four large black spots beyond twice the size of those in the other specimens, the yellow irides prominent and touching. On the underside of the hindwing the two discal fasciæ have almost disappeared, and the five submarginal ocelli are very minute. This specimen differs only in the following particulars from Horsfield’s figure of *E. medura*: The outer margin of the forewing is not quite so evenly rounded, being in fact slightly concave; the large ocellus is not quite so large as in *E. medura*, and the iris is less wide. On the underside the apical ocelli on the forewing are smaller, and on the hindwing the ocelli are minute, and the fasciæ are obsolete. This specimen, however, is much nearer *E. medura* than *E. angularis*.” (Marshall and de Nicéville, l. c.)

species the ocelli on the upperside of the hindwing are much larger than in the other form from the same locality, whilst on the underside both the ocelli and the bands are almost obsolete, I am rather inclined to suspect seasonal dimorphism, and to think that this form is the last of the first brood, and the others, among which males are far more numerous, are the first of a second brood. In the Javan specimen we have the hindwing like one form below and the other above. Further observations are requisite to decide the question."

*E. medura* and *E. angularis* are abundantly distinct. The former has three apical ocelli in the forewing, the inner discal band straight, the outer band apparently once outwardly angled in the hindwing; while the latter has four apical ocelli, the inner band outwardly angled in the middle, the outer band twice outwardly angled.

Mr. Elwes suggests that seasonal dimorphism may occur in the genus. At present I see no indications of the appearance of this phenomenon, at any rate if the usual form of seasonal dimorphism observable in the *Satyrinae* is understood. I possess the strongly ocellated *E. undularis* taken in January, October, November, and December, all of which months (except occasionally October) are dry months, when the ocelli should be obsolete: while the two type specimens of *E. falcipennis* were taken in the height of the rainy season, August and September, but have minute ocelli, instead of the normal rainy-seasonal large and well-developed ocelli. I append a note by Mr. W. Doherty on the subject, which bears out my opinion, and I may add that it is at his suggestion that I have described *E. rotundata*.

"The prehensors of *Erites* are slender and simple, and of the usual satyrid type, resembling those of most of the species of *Lethe* (*Debis*), to which the genus seems allied, the true *Lethe* (*europa*, Fabricius) being exceptional in having the upper organ without branches. Seen from the side, the upper organ (uncus, tegumen) of *E. angularis* is unusually straight; that of *E. rotundata* is much more depressed terminally. In both species the lower organ (clasp, harpago) is truncate at the tip, but in *E. angularis* it is cut square, while in *E. rotundata* the end is concave, so as to form a distinct scallop."

"Apart from these differences in the prehensors, I think Mr. Elwes' supposition, that *E. rotundata* may be the dry-season form of *E. angularis*, an unlikely one. No seasonal variation has yet been observed in the genus. I found *E. angularis*, which should be the wet-season form, commoner in the dry-season than *E. rotundata*. Finally, the dimorphism, if it exists, must be of a new type. Dry-season forms are distinguished by obliterated ocelli and angular wings, but here the non-ocellate form has the wings abnormally rounded."

I possess the following examples of *E. rotundata*. One male and one female from Beeling, Upper Burma, taken on 27th March, 1886, two males on the 29th idem, one female on the 14th April, by Lieut. E. Y. Watson; two males taken in the Pegu Yoma, Burma, by a native collector employed by the Phayre Museum, Rangoon, in December; one female from Quaymoo, Tenasserim, captured in March and another in November, in the Yoonzaleen Valley, also in Tenasserim by Major C. T. Bingham.

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*Two species of Pedicularis.*—By D. PRAIN.

(With Plates I and II.)

[Received March 9th—Read April 5th.]

In 1889 (*Journ. As. Soc. Beng.* lviii pt. 2, p. 255) the writer had the honour to communicate to the Society descriptions of a number of new Indian species of this genus. Since then a considerable number of new species have been reported from China and Tibet and have been described in various periodicals by Messrs Maximowic, Hemsley and Franchet, and by the writer. Now, another new Indian species has been reported; of this a description is given below and the present opportunity is taken of describing an allied new species from Szechuen.

1. *PEDICULARIS DIFFUSA* Prain, *sp. nov.* (PL. I.)

*Elata simplex vel e collo diffuse ramosa, radice debili ramosa collo esquamato, caulibus gracilibus simplicibus, foliis radicalibus longe petiolatis mox evanescentibus caulinis 4-natis verticillatis laminis glabrescentibus ovato-oblongis pinnatisectis, segmentis 5–8-jugis oblongis obtusis inciso-serratis; floribus verticillatis verticillis numerosis inter se remotis, bracteis foliaceis oblongo-ovatis petiolatis pinnatifidis et inciso-serratis; calycis breve pedicellati campanulati membranacei inflati totius reticulati antice vix fissi dentibus majusculis inaequilatis anticis et lateralibus ovatis inciso-serratis illis duplo his 4-plo summo deltoideo integro latoribus; corollae roseae tubo sursum ampliato calyce duplo longiore basi infracto, labio 3-lobo lobis oblongo-ovatis margine sinuatis lateralibus medio dimidio majoribus, galea leviter arcuata tubo subcontinua apice subincurva erostri; staminibus ex adverso summi ovarii insertis filamentis anticis superne hirsutis; ovario ovoideo stigmate parum exserto, capsula anguste lanceolata apice acuta calyce duplo longiore, seminibus ovoideis testa nigrescente minute reticulatis.*